Progress Update

Coalbed Methane Multi-Stakeholder Advisory Committee (MAC) Recommendations

June 2007

Table of Contents

1.	Executive Summary	3
2.	Background	5
3.	Formation of the MAC II	6
4.	Progress Highlights	7
5.	Non-government MAC II Members' Feedback	19
6.	Next Steps	23
Appendix A	Out-of-Scope Issues	24
Appendix B	MAC II Membership	25
Appendix C	Progress Highlights in Tabular Format	26

Executive Summary

The Coalbed Methane (CBM) Multi-Stakeholder Advisory Committee (MAC) was formed in November 2003 as part of a review and consultation initiated by the Department of Energy (DOE) on coalbed methane. The MAC's Final Report, released to the public in May 2006, contained 44 recommendations to improve existing rules and regulations related to CBM development or to identify areas for further study. Some of the identified issues were unique to CBM, but many others related to broader energy development and may also be linked with other initiatives already underway.

As of March 31, 2007, work had started on 36 of the 44 recommendations, including five recommendations that were completed. This is ahead of the schedule laid out in the government's news release issued on May 11, 2006, which stated that work would begin on 32 of the 44 recommendations during the 2006/07 fiscal year. The following table summarizes the status on recommendations at the end of the fiscal year:

5	Complete
31	Work started
5	Scheduled to start in 2007 or beyond
1	Reviewed and not actioned
2	Not accepted
44	Total recommendations

Work undertaken in the first year targeted higher priority issues related to water protection. Some of this work required extensive collaboration and coordination between ministries. Highlights include:

- Developed a new regulatory framework for water diversion,
- Mandatory water well testing offered for water wells within 600 meters of a CBM well, and
- Increased information gathering and expanded surveillance of groundwater and CBM well-produced water.

Some initial action was also taken in the areas of communication and reducing surface impacts associated with CBM development.

A multi-stakeholder group called the MAC II was formed in September 2006 in response to the recommendation for annual reviews for three years to assess progress related to the recommendations. MAC II stakeholder membership is identical to the MAC, although individual stakeholder representatives may differ (see Appendix B).

Non-government members of the MAC II were provided with an opportunity through a feedback questionnaire to give their views on progress and to review and provide comments on draft versions of the report. Generally, respondents were satisfied with the progress made. For the most part, they indicated that their expectations were either met or exceeded. They considered the first year of progress to represent a strong start in ensuring continued responsible CBM development in Alberta.

While some respondents were pleased with the rate of progress for all the recommendations, others highlighted a few areas where they had hoped for a more speedy implementation, for example, of water-related issues such as the development of a Code of Practice, groundwater mapping, thresholds for regulation of non-saline water diversions, and some land-use related issues. Water, and to lesser extent, land issues should continue to be priority items, according to respondents.

Most respondents believed that the MAC II process was both fair and effective in allowing members to review and monitor progress.

Generally, most MAC II members expressed support for the government's commitment to addressing the Final Report recommendations. They appreciated the government's efforts to keep them informed and updated on the many technical and non-technical issues related to CBM development in Alberta. They reiterated their belief that water-related issues were still considered the most important priority.

Background

The MAC was formed in November 2003 as part of a review and consultation initiated by the DOE on coalbed methane. The purpose of the review was to determine if the existing policy and regulations governing CBM development continue to balance economic benefits with protecting Alberta's water, air and land resources, and minimizing landowner impacts. The MAC's role was to consult with stakeholders and develop recommendations to enhance the rules and regulations associated with CBM development.

MAC members represented environmental and agricultural organizations, landowners, local governments, the energy industry, and provincial government departments and agencies. The departments of Agriculture, Food and Rural Development (now Agriculture and Food); Environment (AENV); Sustainable Resource Development (SRD); DOE and the Alberta Energy and Utilities Board (EUB) collaborated in this process.

The MAC's Final Report, released to the public in May 2006, contained 44 recommendations. Some of the identified issues were unique to CBM, but many others related to broader energy development and may also be linked with other initiatives already underway. The MAC acknowledged there may be insufficient resources to action all the recommendations at once and technical reasons why the outcomes from the completion of one recommendation may be needed before moving ahead with another. To assist government, the MAC proposed nine recommendations for early action. These early action recommendations formed the basis of a cross-ministry implementation strategy. The strategy addressed the MAC's recommendations using four key areas to guide and coordinate work, as well as to report on progress:

1) Protecting water resources,
2) Enhancing information and knowledge,
3) Minimizing surface impacts, and
4) Communication and consultation.

Formation of the MAC II

One of the MAC's recommendations called for a multi-stakeholder group to review progress towards addressing the Final Report recommendations. Recommendation 7.6.1 stated:

> *As recommendations in this document are implemented, it is recommended a multi-stakeholder committee be established by the Assistant Deputy Ministers Sponsors' Committee to conduct a review with the following components:*
> - *Annual reviews for three years to assess progress according to a monitoring plan.*
> - *A second overall review in three years to assess:*
>   1. *The effectiveness of the recommendations,*
>   2. *New issues or information, and*
>   3. *An assessment as to whether additional recommendations may be needed.*

A multi-stakeholder group called the MAC II was formed in September 2006 to carry out this recommendation. Although this committee was initially envisioned as a 'pared down' version of the MAC, there was strong interest from all the stakeholder groups who participated on the MAC to continue to be involved, so MAC II stakeholder membership is identical to the MAC, although individual stakeholder representatives may differ.

The MAC II met three times since September 2006 to review and monitor the progress achieved related to the recommendations. At these meetings, an action plan providing status and specific timelines for each recommendation was provided. This action plan was updated on a continual basis. At the MAC II meetings, government representatives from the various involved departments were available to answer questions from members and provide supplemental background information.

This report is the first progress update on the Final Report recommendations. The progress update covers a 10-month period from May 2006, when the report was released, to March 31, 2007, the end of the government's fiscal year. The report is part of the MAC II's commitment to keep the public informed – one component of a number of communications activities being undertaken to inform Albertans about CBM.

The following sections contain progress highlights, as well as feedback from non-government members of the MAC II.

Progress Highlights

This section provides a high level summary of the key activities undertaken by various government departments, agencies and other groups in addressing the MAC's recommendations. Overall, progress has been made on 36 of the 44 recommendations, including all nine early action items. Work has been completed on five recommendations. Only two MAC recommendations related to royalty and tax incentives were not accepted by the Alberta Government. Another recommendation, to include additional mineral rights information in the Land Titles Registry, is not being actioned based on a subsequent review of the liability and limitations associated with disclosing such information by Service Alberta, the department responsible for the Land Titles Registry. Action on five remaining recommendations is scheduled to begin later in 2007 and beyond. The following discussion summarizes key 2006/07 activities in the four focus areas. Please see Appendix C for a complete list of recommendations and status updates.

1. Protecting Water Resources

Thirteen recommendations in the MAC's Final Report were related to the management of CBM development to protect surface and groundwater quality and supply through coordinated, risk-based processes. Work is underway on all 13 recommendations, including four early-action items.

Three-Tiered Process for Water Diversions

CBM development involving the production of non-saline water must comply with AENV's water diversion application process under the *Water Act*. Two recommendations (3.3.1, 3.3.2) focused on ways to improve or strengthen this process by adopting a risk-based decision tree. In response to these recommendations, AENV is developing a three-tier process to regulate non-saline produced water diversion. A key element of the system is the use of threshold water usage levels to determine whether an approval, a registration pursuant to a Code of Practice, or no authorization from AENV is required.

The following interim threshold levels developed by a sub-committee of the MAC will be used in the decision tree process until scientifically-based levels are determined:

1. **AENV approval** will be required for water diversions greater than 30 cubic metres (m^3) /month per well – or when the cumulative discharge of all CBM wells in a section of land exceeds 100 m^3/month.
2. **Registration under a Code of Practice** will be required for water discharges lower than 30 m^3/month and greater than 5 m^3/month.
3. **No authorization** will be required for water production volumes lower than 5 m^3/month, given its small volume.

Code of Practice

A Code of Practice is being developed in response to recommendation 3.3.1. Code of Practice concepts were discussed at a multi-stakeholder workshop held in December 2006. There was sufficient agreement on the concepts and endorsement to proceed with drafting the Code of Practice. A draft Code of Practice is expected to be completed by spring 2007.

Water Diversion Guidelines

The MAC indicated that the existing AENV guideline for water diversion should be reviewed and enhanced to ensure the principles of protecting aquifers are clear and minimum approval conditions are consistent across the province (recommendation 3.3.3). An updated version of the 2004 Guideline for CBM Water Diversion will be released with the Code of Practice for water diversion. Both the Guideline and Code of Practice will be revised again when the beneficial use policy(ies) and the scientifically derived threshold values are developed.

Drawdown Allowances

In support of an approval to divert water, companies must submit a field-verified survey of water wells, dugouts and springs within 1.6 km of the energy well. Information is also required about anticipated water production levels and the potential effects on adjacent water wells. In response to recommendation 3.3.4, drawdown allowances as a result of CBM depressurization will continue to be addressed as part of the AENV approval process.

Water Sampling

EUB Directive 44 issued in October 2006 addressed surveillance of potentially non-saline water production and accurate water sampling for all CBM wells completed above the Base of Groundwater Protection (BGWP) (recommendation 3.3.5). In these cases, the company must sample the water, investigate the source of the water and provide a mitigation plan. This may result in abandoning wet zones. Where a company wishes to continue to produce, AENV authorization is required. AENV is working with the EUB to use this data to ensure companies acquire the appropriate AENV authorization.

Beneficial Use of Produced Water

The MAC agreed that the potential for treatment and use of non-saline and marginally saline produced water should be investigated (recommendations 3.5.1, 3.5.2, 3.5.3). AENV, in partnership with the Alberta Energy Research Institute, PETAC and DOE, has initiated a study on beneficial use of produced water. The study, which is scheduled for completion by spring 2007, will provide:

- an estimate of produced water associated with energy development in the province;
- a review of legislation or policy relating to beneficial use in Alberta and adjoining provinces;
- a review of produced water management technologies; and
- a discussion on regulatory and civil risks associated with beneficial use of produced water.

The results of the study will be used in multi-stakeholder workshops on beneficial use of produced water, which will probably be held in the fall of 2007.

Drilling and Completion Practices

The MAC included recommendations in its Final Report to ensure the continued effectiveness of EUB requirements to protect aquifers and water wells (recommendations 3.3.7, 3.4.1 and 3.4.2). In January 2006, in advance of the final MAC report, the EUB issued Directive 27 on shallow fracturing, which initiated a multi-stakeholder technical committee to review current practices and information, and to advise on the need for new requirements. The committee retained the University of Calgary to review industry's technical evidence and provide a third-party assessment and estimate of fracturing propagation vertically and horizontally. The EUB imposed interim controls for shallow fracturing pending the conclusion of the review.

There have been ongoing literature reviews of the potential impacts from using untreated water for drilling and completion. While this work did not demonstrate any technical need for new requirements, a study by third party experts will commence in 2007/08, followed by the release of a public report. The EUB also updated Directive 36 in February 2006 to address non-toxic drilling and completion components.

Water Well Testing

Effective surveillance is an important component of a regulatory framework along with strong technical requirements and a risk-based application process. In this regard, AENV issued a provincial baseline water well testing standard in May 2006 (recommendations 3.3.5 and 3.3.6). Under the standard, companies wanting to drill shallow CBM wells must offer testing to landowners on any active water well within a 600-metre radius of new or recompleted CBM wells above the BGWP. These baseline tests must measure the water well's production capability, water quality (including bacteria) and the absence or presence of gas (including methane gas). Baseline testing requirements are regulated by the EUB according to Directive 35. Application audits show high industry compliance. Non-compliance will be enforced in accordance with EUB Directive 19. AENV is collecting the well testing results and compiling them in a database, which will eventually be available to the public.

The water well baseline testing standard requires operators to offer to sample water wells before work starts on drilling a CBM well. The water wells are sampled again only in situations where there is a complaint or other situation that suggests there may be an impact from CBM activity. A key MAC recommendation (3.3.6) was that a clear process for addressing water well complaints be developed and communicated to stakeholders. In response, AENV completed a fact sheet on the complaint process, which is posted on its website (http://www.waterforlife.gov.ab.ca/coal/docs/Water_Well_Investigations.pdf). Work is continuing with the EUB, SRD and the Farmers' Advocate to improve the government's response to all water well complaints, not only those involving CBM.

AENV released a gas sampling protocol in June 2006, which provided guidance to industry on gas sampling requirements for baseline testing (recommendation 3.3.5). AENV also retained the University of Calgary to conduct a study on the merits of free gas sampling versus dissolved gas sampling. The study is expected to be completed by spring 2007.

The government committed to review baseline data on a regular basis to ensure the water well baseline testing standard is working. To that end, a Scientific Review Panel was established in September 2006 to review the data and recommend areas for improving the baseline testing standard. A report summarizing the Scientific Review Panel's findings and recommendations is expected in December 2007. Outcomes from this review and information from the expanding databases will be used to further study the potential for methane migration or release to water wells as a result of CBM depressurization (recommendation 3.6.1).

The AENV and EUB have aligned their processes for baseline water well testing and conducted preliminary discussions on opportunities for data sharing. This continues the enhancement of coordination activities and is the first step in the development of electronic solutions to facilitate data exchange. Development of a large-scale, public, user-friendly database is a long-term goal (recommendation 3.3.6).

2. Enhancing Information and Knowledge

The MAC recognized that Alberta-based CBM water information can help guide the future actions of regulators and industry. Considerable effort has been made in the first year to address this category of MAC recommendations.

Mapping BGWP and Groundwater Inventory

Alberta's groundwater is not as well-defined as its surface water and the MAC recommended that BGWP mapping should be completed (recommendation 3.2.1). The BGWP database provides data on a township basis and is used, for example, by energy companies to comply with the EUB's resource well drilling and completion requirements.

Documenting groundwater quality, water volumes and depths of producing zones is a challenging process. However, the locations of some major aquifers in the province are generally well known, as a result of groundwater mapping initiatives such as the following:

- In the mid 1960s, the Alberta Research Council commenced a reconnaissance groundwater mapping program of the province. These maps provide information about geology, groundwater quality and quantity, and groundwater flow. The mapping was completed in the mid-1980s.
- In 1995, the Prairie Farm Rehabilitation Administration under Agriculture Canada initiated a more detailed groundwater mapping program in the agricultural areas of the province. Reports were prepared in conjunction with local municipalities.
- The Alberta Research Council, the Alberta Geological Survey (AGS) and AENV have prepared many mapping and groundwater assessment reports for local areas in the province (e.g., the Cold Lake – Beaver River Groundwater Study, and AENV's groundwater mapping project in the Canmore Corridor area of Alberta (2002)).
- In 2006, the Geological Survey of Canada completed a study of the hydrogeology of the Paskapoo formation, a major aquifer in central Alberta.

AENV has retained the AGS to update the BGWP database. The goal is to create a web-based tool that will provide users with the depth of the BGWP for any location in the province on a legal subdivision basis. This will help operators easily determine the BGWP for a specific well without having to contact the government. The AGS has completed its work and a public notice will be issued in the spring 2007. The updated BGWP database will be accessible to the public through a website maintained by the EUB.

In response to MAC recommendation 3.2.1, AENV initiated a project in the summer of 2006 in partnership with the EUB/AGS to increase the understanding of the shallow geology and the potential impacts from drawing water from Ardley coals on the water level of the overlying Paskapoo aquifer. Scheduled to be completed in two years, the project is being guided by a steering committee chaired by the AGS. The initial stage of the project involved gathering prior research and the data from hydrogeological/water well and geological/petroleum industry databases from which the stratigraphic framework will be constructed (i.e., AENV water well database). The project will provide information on groundwater quality and quantity in the Ardley and overlying Paskapoo formations and be used to evaluate the risk of CBM development to groundwater quality and quantity in the area (recommendation 3.6.1).

Another three-year study has been initiated to update information on the province's groundwater resources. The objective of the study is to use current information to classify, identify and delineate aquifers in the province. The first phase of the work involves consultation with experts in groundwater management from Alberta and other jurisdictions. A workshop is planned in the spring 2007 with these specialists to discuss an appropriate aquifer classification system. Once the classification system is finalized, groundwater mapping will commence, starting with the Edmonton-Calgary corridor.

To further expand available information, the EUB issued Directive 43 in December 2006, requiring geophysical logging behind surface casing for all new wells (recommendation 3.3.6). This additional geophysical knowledge will be particularly useful for future groundwater mapping exercises, such as those mentioned above. The information will also be useful in water well complaint assessments.

The EUB also identifies and tracks all CBM wells in EUB Bulletin 2007-05. The geology and well producing characteristics are analyzed to better understand the CBM resource, reserves, and its potential risk to water.

Water Well Monitoring

AENV maintains a province-wide groundwater observation well network to monitor groundwater levels and groundwater quality in aquifers that have a potential to be used for water supply purposes. This network consists of approximately 200 observation wells, ranging in depth from 60 to over 250 metres. In addition, groundwater is also monitored in the vicinity of reservoirs, rivers, lakes, dams and oil sand developments to determine impacts on local groundwater systems.

The MAC recommended AENV expand its provincial groundwater monitoring program (recommendation 3.2.1). In this regard, AENV has completed four new groundwater observation wells in the Ardley coal zone and three wells in the Rosebud area. AENV is continuing to work with industry and other organizations to identify suitable industry-owned observation water wells that could be donated to the province for incorporation into the provincial system. In the past year, approximately five wells from industry/other organizations have been donated.

In the summer of 2006, AENV completed a review of the provincial observation well system to identify observation wells in CBM activity areas that could be sampled. A total of 40 wells were identified as suitable for water and gas sampling. Approximately 30 of the wells were sampled by the end of February 2007. A report on the results of the sampling is expected to be completed by spring 2007. Work is continuing to identify which observation wells will be sampled during the next fiscal year.

CBM Review of Other Jurisdictions

Reviewing other jurisdictions as recommended by the MAC (recommendation 8.1.2) is a common feature of technical regulatory reviews. An example of this type of work is EUB Directive 27 on shallow fracturing, which included a full literature review of fracturing technology and a review of related regulatory practices in other jurisdictions. Additional reviews of the experiences, practices, and policies for CBM development in other

jurisdictions will take place on an ongoing basis by the EUB, AENV and others. Alberta will also host other jurisdictions in their endeavours to learn from our experiences.

3. Minimizing Surface Impacts

The MAC's recommendations on minimizing surface impacts range from activities associated with local improvements to looking at potentially major changes resulting from reviews of province-wide land use policy. There are a number of diverse activities that are advancing progress on recommendations in this area.

Integrated Land Management

Work is currently underway on Integrated Land Management (ILM), a priority government-led policy initiative addressing all types of access on public lands (recommendation 4.3.1). Six ILM multi-stakeholder working groups were established to provide direction on key components of the ILM process (principles, protocols, incentives, stewardship, governance, measures). Results were presented at an ILM Workshop held January 22 to 24, 2007. Final recommendations are expected to be completed by July 2007. An initiative to establish a pilot area in northeastern Alberta is also underway, but has been delayed pending the outcomes from the ILM Program and Land-use Framework. This pilot area is not in a region specifically targeting CBM, but there may be consequences for CBM operators.

Project-Based Planning

The EUB has initiated a 'land challenge' project for intense development, including CBM, in response to broad stakeholder feedback. The project is testing different ways of enhancing and promoting project-based planning and disclosure, early community engagement and other options to ensure appropriate development and land access. A series of pilots involving landowners, operators and local government is being conducted. The first two pilots addressed potential Horseshoe Canyon CBM development in two separate one-township blocks east of Carstairs and Innisfail. Recognition and inclusion of CBM in the land challenge project is the EUB response to MAC recommendations 7.2.1 and 7.3.1. It also contributes to recommendations 7.5.1 and 4.2.1, both of which focus on how to minimize surface impacts due to CBM development.

Addressing Cumulative Impacts

A new format for SRD Area Operating Agreements has been implemented and further work is being done on risk management, quality assurance and compliance. Approvals are being issued under the new format. A process for electronic submission of monthly status reports is currently being developed.

The MAC also recommended that the EUB, AENV and SRD review all of their regulatory processes to identify ways to minimize surface disturbance and reduce cumulative impacts associated with CBM development (recommendation 4.2.1). Early action taken on this recommendation is reflected in EUB Bulletin 2006-44, which introduced new rules on commingling of different pools in the same wellbore. These new rules will promote both appropriate resource conservation and reduced surface impacts, as commingling generally minimizes the number of wells needed to recover resources from multiple stacked intervals. The changes also decrease the regulatory requirement for segregated pool tests, further reducing the need for companies to access land during general operations.

Reclamation

The University of Calgary completed a study on Foothills fescue reclamation (recommendation 4.3.2), which called for improvements to the technology used for remediation and reclamation of land in sensitive areas. The report provides information and background on current and possible future reclamation criteria. The report also contains key findings that can assist industry in planning and reclamation methods for rough fescue grasslands. The report (Restoration of Rough Fescue (Festuca Campestris) Grassland on Pipelines in Southwestern Alberta) can be found at http://www.srd.gov.ab.ca/lands/managingpublicland/rangemanagement/monitoringreferenceareas.aspx In addition, industry will continue to consult with SRD to minimize disturbance to wildlife habitat on a project-specific basis, as identified in recommendation 9.6.1.

Short-term Noise

The Canadian Association of Petroleum Producers (CAPP), along with stakeholder input, has developed a best practices manual for CBM. Many of the recommended practices focus on ways to reduce the environmental footprint of industry, such as ways to address short-term noise complaints (recommendation 9.2.1).

4. Communication and Consultation

The focus of these recommendations is to increase opportunities for dialogue and public awareness on possible impacts of CBM development so that Albertans are better informed and engaged. Of the 18 recommendations in this category, 11 are on schedule, five are complete, one is to start in 2009, and one will not be actioned.

Public Awareness

Government and industry have developed considerable Alberta-based CBM information, which is available on the DOE and EUB websites (recommendation 7.5.1). Albertans no longer need to access U.S. information which may not be relevant to Alberta's geology and regulatory framework. Examples of the type of information available include extensive CBM geological, water and resource work by the AGS (e.g., EUB/AGS Special Report 081: Water Chemistry of Coalbed Methane Reservoirs) and Alberta CBM activity tracking and annual reporting by the EUB (e.g., Bulletin 2007-05: 2006 Alberta Coalbed Methane Activity Summary and Well Locations).

Regulators, industry and associations have been very responsive to local groups' invitations to speak at meetings and at other events. AENV, in partnership with the EUB, the Farmers' Advocate and industry, led 13 community information sessions in June 2006 to provide information on water issues related to CBM production. The sessions were extremely well attended by landowners. Information sessions continue to be provided on a request basis. AENV is partnering with Agriculture and Food and the Prairie Farm Rehabilitation Association to develop water well maintenance training sessions for water well owners. The intent of the sessions is to increase public awareness of groundwater, of water well construction, and of the importance of water well maintenance. Two training sessions were delivered by the end of March 2007.

Timing Requests

Further to MAC recommendation 9.3.1, the EUB will continue its practice of considering the timing requests of surface rights holders or leaseholders during critical agricultural periods when scheduling hearings.

Industry Advice

EUB's Directive 27 summarizes the rules related to water protection. Consultation with companies involved numerous one-on-one discussions with operators to clarify requirements and confirm their understanding and commitment to comply with the directive (recommendation 3.4.1).

Split Title Ownership Information

The DOE posted new material on its website in December 2006 to provide stakeholders with information on the history of mineral ownership and freehold rights. The information also discusses issues pertaining to CBM ownership on split-title lands (recommendation 6.2.1).

In Decision 2007-024, the EUB confirmed that 28 CBM well licences and related approvals in split-title situations were properly issued to the natural gas holder. In its decision, the EUB acknowledge the ultimate authority on ownership of CBM belongs to the courts. (http://www.eub.ca/docs/documents/decisions/2007/2007-024.pdf)

Non-Productivity Notices

The DOE has also reviewed and validated the procedures and policy regarding the criteria for Section 18 Notices of Non-Productivity (recommendation 6.3.1) and is currently consulting within the department on the matter. If required, an external industry consultation to review and clarify non-productivity notices will take place toward the end of 2007.

Well Spacing Information

In response to recommendation 7.5.3, additional information is now available on EUB spacing rules, a common source of questions from the public. The EUB included a well density clause in its spacing/holding applications in the fall of 2005 which clarified an area of public concern. The EUB has also added an explanation on 'number of wells per section per pool' to its Frequently Asked Questions on spacing on its website (http://www.eub.ca/portal/server.pt/gateway/PTARGS_0_0_201_0_0_35/http%3B/extcontent/publishedcontent/publish/eub_home/news/current_projects/spacinginitiative_q_a.aspx).

Setback Information

The issue of clarifying and communicating the requirements, roles and responsibilities related to setbacks (recommendation 7.5.4) has been referred to Municipal Affairs and Housing (MA&H) and the EUB, who are compiling a list of setbacks for CBM facilities and equipment. MA&H is also working with its Emergency Management Alberta and Public Safety Division to assist with Canadian Standards Association-recommended standards.

Mapping Tool

The DOE is developing an online mapping tool prototype to display the results of the most recent petroleum and natural gas sales data (recommendation 9.4.1). In addition, current instructions on the DOE's website on how to conduct an information search by land or by mineral agreement are under review for simplification opportunities (recommendation 9.4.2).

Land Agents

Human Resources and Employment (now Employment, Immigration and Industry) has drafted new regulations to provide more stringent standards of conduct, education and continuing competency requirements for land agents (recommendation 9.5.1).

The Canadian Association of Petroleum Landmen has also initiated a voluntary certification program for agents.

Land Titles Information

Recommendation 9.7.1., to include additional mineral rights information in the Land Titles Registry, was considered by Service Alberta. Based on a review of liability and limitations on disclosing such terms, Service Alberta decided that no changes would be implemented to the existing database.

Best Practices

The MAC identified a need to enhance industry practices that go beyond regulatory requirements (recommendation 8.1.1). To this end, with stakeholder input, the Canadian Association of Petroleum Producers (CAPP) developed a best practices manual for CBM. This manual was issued in May 2006 and is posted on CAPP's website (www.capp.ca/raw.asp?x=1&dt=NTV&dn=103407). Workshops will be held at four locations in Alberta during May 2007 to communicate the best management practices to the public as well as to industry field personnel.

Other

The Final Report identified the need for sufficient financial and human resources to successfully address the recommendations (recommendation 7.7.1). The MAC also noted it would be impractical to begin work on all recommendations immediately. The government has placed a high priority on addressing recommendations through effective and efficient allocation of resources. This is demonstrated by work having commenced on 36 of the recommendations in the first year, rather than the 32 recommendations identified in the initial action plan released May 2006. The government will continue to evaluate progress and resource requirements to ensure appropriate levels of resources are available to action the recommendations.

Non-Government MAC II Members' Feedback

The following section reflects feedback from non-government MAC II members on the progress achieved to date in addressing the final recommendations. This feedback was gathered through the distribution of a questionnaire and subsequent comments on draft reports. The majority of non-government organizations submitted feedback questionnaires. However, not all the responses were provided in detail. The input from non-government members who provided a response is summarized below in the four main recommendation categories:

1. Protecting water resources
2. Enhancing information and knowledge
3. Minimizing surface impacts
4. Communication and consultation

The feedback is separated into two groups (see Appendix B):

1. feedback from non-industry members, such as landowner and environmental groups and
2. feedback from industry members, which includes energy industry associations members.

Protecting Water Resources

The Final Report of the MAC identified protecting water resources as a significant concern related to CBM development. Water-related recommendations include establishing a more rigorous regulatory process to address CBM operations that potentially pose a greater risk to non-saline water resources. The development of standard procedures and reporting requirements for sampling, analysis and monitoring of both saline and non-saline water quality and quantity for CBM wells and potentially affected water wells is also important. Protection of water resources continues to be a major concern and a priority for all respondents.

Non-Industry Feedback

Respondents were pleased with the progress so far related to the actioning of water-related recommendations, but hoped that target dates for some recommendations could be moved ahead, for example developing a technical and scientific approach for the Code of Practice and thresholds associated with non-saline water situations, as well as recommendations related to the study of the potential for methane migration and possible impacts of CBM on surrounding aquifers.

Some respondents believed that lack of sufficient resources and/or the challenges of multi-department/agency coordination were responsible for the slower-than-desired progress in some areas. They encouraged government to look for ways to improve the work environment to foster more timely action. They recognized the hard work of AENV staff, but believed more resources are needed.

There was concern raised by one respondent that while major actions have been undertaken, some of the sub-recommendations do not appear to be completely addressed. One respondent raised their concern about lack of enforcement by the EUB, related to the requirement for water well monitoring by industry.

Industry Feedback
Generally, industry respondents were satisfied with the progress. One respondent noted that the government was either on schedule or ahead of schedule for the vast majority of recommendations. Other industry respondents had concerns about the completion schedules of some recommendations. For example, some of the recommendations are scheduled for completion in 2012, in particular, the groundwater inventory. It was suggested that this timeframe be moved up, if possible.

One respondent indicated that industry has some specific concerns regarding the effective conservation and management of Alberta's water resources. Those concerns include:

- In order to create a complete inventory of groundwater in the province, all water wells should be registered. If unregistered wells are excluded, the inventory cannot be complete.
- Well owners who have not registered their wells should not expect to be afforded the rights associated with registered wells.
- AENV's recent clarification regarding drawdown allowances (recommendation 3.3.4) and communication of the existing rules have been misleading. AENV needs to be clear that drawdown allowances apply to all water wells, not just to the wells belonging to industry.

It was noted by an industry representative that CBM is a minor player with regard to using water resources, but that it could serve as a catalyst to get more broad-based attention and action on water-related issues involving other water users.

Enhancing Information and Knowledge

The MAC indicated in its Final Report that more information and knowledge is required in order to ensure the continued responsible development of CBM in the province. For example, there was an 'umbrella' recommendation to improve scientific information about the province's water resources, including completion of a groundwater inventory and the BGWP mapping project, and obtaining baseline water data on quality and quantity in non-saline aquifers. As well, more scientific information is needed to develop a threshold volume of produced water below which a simplified Code of Practice will apply.

Non-Industry Feedback
While feedback on this topic was limited, there was a general sense that more effort was required to acquire information more quickly, for example:

- determining a technical and scientific approach for thresholds for a Code of Practice;
- groundwater mapping (especially in the Ardley zone);
- creating the public water well database; and
- creating the consolidated public CBM database.

Information needs to be gathered prior to any increase in CBM activity, according to one respondent.

Industry Feedback
One respondent believed that this category needs improvement on all fronts. Another respondent indicated that accurate data collection depends on incorporating data on water use by all parties. It is believed that there are over 400,000 unregistered water wells in the province today. These wells represent a significant withdrawal of water that remains unrecognized in the collection of data and will prevent the completion of an accurate groundwater inventory.

Minimizing Surface Impacts

Concern about surface impacts related to CBM operations in the MAC Final Report focused on recommendations that addressed the need to protect the environment and minimize cumulative impacts. For example, the MAC recommended that the CBM regulatory process promote project-based planning to manage potential long-term surface impacts.

Non-Industry Feedback
Some respondents indicated that some recommendations were moving along too slowly, especially those related to identifying sensitive areas, public lands and agricultural lands, as well as minimizing cumulative impacts. It was noted that it was not clear how much was being done with regard to agricultural lands other than addressing well spacing and reclamation issues. One respondent indicated that there needs to be immediate action to identify environmentally sensitive and threatened areas within regions of CBM activity, as well as baseline studies.

Suggestions were made to move up some of the milestone dates related to specific recommendations and to ensure that areas with CBM development are addressed more quickly under SRD's Integrated Land Management Program. It was also suggested that additional resources for SRD would help speed progress.

Industry Feedback
Industry respondents were generally satisfied with the progress of recommendations related to land use and surface impact. One respondent indicated that industry is not convinced that the current ILM process has recognized CBM concerns because no clear reference is provided in recent documentation. It was noted that the ILM process only addresses Crown lands and that CBM operations occur almost entirely on private lands. This respondent agreed with some non-industry respondents that this process is moving too slowly. The same respondent questioned whether the EUB's Land Challenge pilot project was a direct result of the MAC recommendations and believed that CBM was not the key rationale behind the choice of locations for the pilots.

Communication and Consultation

The MAC's Final Report addressed the need for enhanced communication and ongoing consultation on CBM-related topics with all stakeholders, including members of the public.

Non-Industry Feedback
Respondents highlighted the MAC II itself as a communication tool, noting that the MAC II process has been an effective forum for exchanging information and addressing concerns. It was noted that this report is one way to inform the public on CBM issues on an ongoing basis.

The recommendations relating to promoting communication and consultation need to be addressed more effectively, according to some respondents. One respondent requested more detail on the actions undertaken in the progress reports they receive. Another respondent noted that it was very important that landowners be kept abreast of Best Management Practices and what can be expected prior to development.

Industry Feedback
One industry respondent was pleased with the commitment of all MAC II members to communication and understanding during the MAC process, but indicated that improvement was needed on a number of fronts. It was noted that some stakeholder organizations were acting as catalysts for positive change, but there were other organizations that seemed unwilling to engage in meaningful exchanges. Another respondent believed that recommendations related to project-based planning and disclosure, public consultation notification distances, and accessible current public information and communication were very important issues that, once addressed, will go a long way toward improving public understanding of the oil and gas industry and interaction between all parties at the table.

Other Recommendations

A number of industry and non-industry respondents shared a concern about possible delays associated with some recommendations. One respondent believed that the slower progress than desired was likely due to the complexity of the recommendations, requiring greater coordination among the different government departments and agencies involved. Another respondent questioned whether the slower than desired progress was due to insufficient resources available in the government departments, and wondered whether recommendation 7.7.1 had been adequately addressed. This recommendation states:

> *Appropriate government departments and agencies should have sufficient resources to be able to implement these recommendations effectively and efficiently.*

The MAC had understood that to address all the accepted recommendations in a timely manner would require additional resources for some departments and agencies. Possible staffing shortages for SRD and AENV were specifically mentioned.

Additional Comments

A number of respondents suggested undertaking actions that were not explicitly identified in the Final Report or associated with specific recommendations. These suggestions are considered to be out-of-scope with respect to the initiatives and work undertaken by the MAC II (see Appendix A).

Next Steps

This public progress summary report provides an update on the first year of addressing MAC Final Report recommendations related to CBM development in Alberta.

It reflects the ongoing commitment on behalf of the MAC II, government and industry to an open and transparent process. It is clear from the work completed and commitment to continue to address outstanding issues that all parties have placed a high priority on actioning the recommendations from the MAC process. The government anticipates there will continue to be a strong focus in the coming year on addressing water-related issues and the environmental impacts associated with CBM operations.

In an effort to continue to have an open and transparent process, further public updates will be provided as work continues to address the recommendations. The MAC II will continue to meet to monitor government and other stakeholder activities related to addressing the MAC's recommendations. For more information, please see the DOE's website http://www.energy.alberta.ca.

Appendix A Out-of-Scope Issues

Some examples of the out-of-scope suggestions identified by non-government MAC II members include:

- Report to the public on specific problem water issues once they have been resolved as a way of helping educate stakeholders.
- Expand water-related recommendations to encompass all water users, not just CBM developers.
- Expand activities related to water well testing, e.g., develop quality assurance/quality control measures and a process to handle water well complaints, as well as require operators to establish a 'monitoring water well' if there is no existing well to collect baseline water data.
- CAPP's Best Practices Manual should be reviewed and updated every few years and best practices should be enforced.

In addition, one MAC II member indicated there was a bias of information developed to address the split title ownership recommendation that was posted on the DOE web site. The purpose of the information was to make Crown lessees, freehold owners and industry aware of the risks and associated impacts associated with split title ownership. According to the respondent, the information presents the position of the Tenure Working Group, one component of the three-year CBM consultation and review. The respondent believed that this information as well as other issues were not adequately or fairly addressed because the Tenure Working Group did not include representation from freehold landowners.

Appendix B MAC II Membership

Non-Industry Members:

- Alberta Association of Municipal Districts & Counties (AAMD&C)
- Alberta Environmentally Sustainable Agriculture Council
- Alberta Surface Rights Federation
- Butte Action Committee
- Freehold Owners Association of Alberta
- The Pembina Institute
- Alberta Beef Producers

Industry Members:

- The Coal Association of Alberta
- Canadian Association of Petroleum Producers/Canadian Society for Unconventional Gas (CSUG)/Small Explorers and Producers Association of Canada (SEPAC) – *representing two members on the MAC II*
- Canadian Association of Petroleum Landmen

Provincial Government Members:

- Alberta Agriculture and Food
- Alberta Energy
- Alberta Energy and Utilities Board (EUB)
- Alberta Environment
- Alberta Sustainable Resource Development

Facilitator:

- Alberta Tourism, Parks, Recreation & Culture

5 - complete
31 - work started
5 - scheduled to start in late 2007 or beyond
1 – reviewed and not actioned
2 – not accepted
44 Total Recommendations

Appendix C: Progress Table
MAC Recommendations
As of March 31, 2007

NOTE: Early Action Items Indicated in Bold Face Type

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
Protecting Water Resources					
3.3.1	AENV should establish a multi-stakeholder technical committee to determine an appropriate, scientifically-based threshold volume for produced non-saline water below which a simplified approval under a Code of Practice for production or use of the water would apply.	2008	on schedule	• Adopted the interim threshold volumes developed by a subcommittee of MAC. • Stakeholder workshop held on December 14 to discuss the Code of Practice concepts. Process to review threshold limits also discussed at the workshop. • EUB Directive 44 (Oct. 31/06) increases the surveillance of produced water above BGWP and enhances produced water sampling and procedures	Directive 44 will ensure more accurate information is available to AENV and other EUB groups.
3.3.2 E	**AENV and the EUB should develop a 'decision tree' approach for reviewing CBM applications involving non-saline water production. This process should address the level of risk to aquifers and users by considering factors such as hydrogeological settings, existing users, salinity and expected volumes of water produced. The decision tree should be developed with stakeholder input and should:**				
3.3.2.1	Incorporate the threshold volume of produced non-saline water, below which the Code of Practice would apply (See Recommendation 3.3.1).	2008	on schedule	• Adopted the interim threshold volumes developed by a subcommittee of MAC. • Stakeholder workshop held Dec 14 to discuss Code concepts and the process to review threshold limits.	Draft Code of Practice expected to be completed in spring 2007
3.3.2.2	Consider geographical areas where the risk to the quality or quantity of water supplies might be greater than in other areas.	2008	on schedule	• Ardley-Paskapoo groundwater study commenced. This study will look at the risks associated with CBM development. • Water-short areas identified through oilfield water injection study.	A workshop of groundwater experts will be held in spring 2007 to discuss aquifer characterization requirements for groundwater mapping of the Edmonton-Calgary corridor.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
3.3.2.3	Ensure that applications for CBM wells that would produce volumes of non-saline water in excess of threshold volumes trigger accelerated aquifer studies.	2009	complete	Any water diversion already requires an aquifer study. An updated version of the 2004 Guideline for CBM water diversion will be released with the Code of Practice.	
3.3.2.4	Ensure appropriate compliance with the decision tree.	2008	to start in late 2007 or beyond	Activity to be coordinated with the EUB produced water surveillance.	
3.3.3	AENV's Guidelines for Groundwater Diversion for CBM Development (April 2004) should be enhanced and required for a single well or group of wells where non-saline water is present or anticipated.				
3.3.3.1	The guidelines should be reflected in the risk-based decision tree process.	2008	on schedule	The guideline will be updated once the Code of Practice and beneficial use policy is finalized. Interim threshold values will reflect qualitative risk.	
3.3.3.2	To ensure consistency, minimum conditions for approvals should be standardized across the province with additional site-specific conditions possible.	2008	on schedule	Interim threshold value will be used to determine when an approval is required. Site-specific conditions will be considered in the approval process.	All Water Act approvals already have standardized minimum conditions.
3.3.3.3	The components of the field-verified survey of all water sources should be reviewed to ensure their appropriateness and effectiveness with regard to the scale of the project.	2008	on schedule	• Baseline water well testing tied to CBM well licensing process • Site-specific conditions will be considered in the approval process	
3.3.3.4	A province-wide review of existing CBM wells should be undertaken to ensure all guidelines have been met.	Ongoing	on schedule	EUB surveillance and audit processes enhanced.	
3.3.5 E	**AENV and the EUB should work with stakeholders, including the environmental service industry, to develop standard procedures and reporting requirements for the sampling, analysis, and monitoring of both saline and non-saline water quality and quantity for CBM wells and potentially affected non-saline water wells. Quality assurance and quality control measures should be developed, as well as a range of tests, depending on the type of water being tested, including:**				
3.3.5.1	Testing for a variety of metals and other impurities, as well as total dissolved solids.	2007	on schedule	• Scientific Review Panel established to review baseline-testing standard. First panel meeting was held Dec 8.	Next meeting scheduled for early spring 2007.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
3.3.5.2	Testing for the presence of gas in water wells. The presence or lack of gas should be included on the water analysis report or file.	2007	on schedule	• Gas sampling incorporated in baseline water well testing standard. • Gas sampling protocol completed Aug 2006 by AENV. • U of C study on merits of "free" versus "dissolved" gas sampling to be completed in spring 2007. • Scientific Review Panel established to review gas sampling protocol.	(See Section 3.6 for discussion on methane migration and release).
3.3.5.3	Non-saline water produced from coal seams should be tested for its intended use or to determine what it can be used for.	2008	on schedule	To be addressed in beneficial use policy.	
3.3.6	AENV should develop a water well testing program as follows:				
3.3.6.1	CBM operators should be required to offer baseline testing (as described in 3.3.5) of all nearby water wells within a specified distance of a proposed CBM well to be completed above the BGWP. (No consensus reached on an appropriate distance or depth of completion.)	2006	complete	• Standard for Baseline Water-Well Testing for Coalbed Methane/Natural Gas in Coal Operations implemented by the EUB, effective May 1, 2006. • Scientific Panel established to review Standard.	
3.3.6.2	The information from the baseline testing should be filed by operators in an open, public registry to enhance understanding of Alberta's groundwater system.	ongoing	on schedule	• Template developed and interim spreadsheet available to capture initial data. Data entry is ongoing.	Work on a publicly-accessible system is continuing.
3.3.6.3	A clear process to address water well complaints should be developed and communicated to water well owners, surface rights holders and other stakeholders.	2007	on schedule	• Complaint number (1-800-222-6514) is posted on AENV website under "Emergency Numbers". • Complaint process communicated in June CBM public information sessions. • Complaints process fact sheet prepared and posted on AENV website.	Complaint Fact Sheet posted at: http://www.waterforlife.gov.ab.ca/coal/docs/Water_Well_Investigations.pdf Discussions will continue with the EUB, SRD and Farmers' Advocate to enhance response to water well complaints.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
3.3.7	AENV and the EUB should review drilling and completion practices for new and recompleted water and energy wells, ensuring regulations are appropriate for the purpose of the well. Topics to be addressed should include: drilling and completion fluids; well bore integrity/aquifer isolation; casing types; fracturing; and completions, etc. This review should include the drilling and abandonment of temporary water source wells.	2010	on schedule	• The EUB issued Directive 27 (Jan. 31/06) imposing constraints on shallow fracturing. • A multi-stakeholder technical review committee has been established and continues to meet. • Interim controls have been implemented. • EUB issued an update to Directive 36 (Feb 06) to address non-toxic components. • EUB initiated a one-year field surveillance program specific to CBM in fall 2005 to monitor compliance to identify if there are other areas requiring short term reviews and change. • A CBM control well system is in place to collect segregated data specific to production from coals.	Early action is targeting higher risk components.
3.4.2 E	**The EUB and AENV should, in cooperation with other organizations such as the ARC, investigate whether CBM drilling and completion practices such as using dugout water and untreated river water may affect aquifers, and review regulations to determine whether changes are needed.**	**2007**	on schedule	An element of 3.3.7	A third party review will be conducted in 2007 and a public report prepared. Past reviews have shown no potential for impact.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
3.5.1	AENV and the EUB, with stakeholder input, should: • Review existing requirements for deep well disposal of non-saline produced water and consider alternatives, if appropriate. • Establish criteria for the beneficial use of non-saline produced water. • Develop guidelines, including a requirement for a beneficial use assessment for non-saline produced water, and include them in the decision-tree approval process. • Revisit authorized diversions of non-saline groundwater for industrial use when CBM developments create new sources of water in the area.	2008	on schedule	AENV in partnership with PTAC, AERI, EUB and Alberta Energy, conducting a study that will review beneficial use policy issues in other jurisdictions and identify beneficial use opportunities.	Information from the study will be used as a resource for multi-stakeholder workshops to be held in fall 2007 to discuss beneficial use of produced water.
3.5.2	AENV and the EUB, with stakeholder input, should establish criteria for the beneficial use of marginally saline produced water. AENV and the EUB, with stakeholder input, should then develop guidelines, including a requirement for a beneficial use assessment for marginally saline produced water, and include them in the decision tree approval process.	2008	on schedule	AENV in partnership with PTAC, AERI, EUB and Alberta Energy, conducting a study that will review beneficial use policy issues in other jurisdictions and identify beneficial use opportunities.	Information from the study will be used as a resource for multi-stakeholder workshops to be held in fall 2007 to discuss beneficial use of produced water.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
3.5.3	AENV, the EUB, and Alberta Energy (AE) should work with the water producing and environmental services industries to promote the development of new technology or the application of existing technology that can take advantage of saline and marginally saline produced water.	ongoing	to start in late 2007 or beyond	• Water Innovation Forum held June 06 showcasing new produced water management technology and ideas. • AENV in partnership with PTAC, AERI, EUB and Alberta Energy, conducting a study that will review beneficial use policy issues in other jurisdictions and identify beneficial use opportunities. • Promoting and encouraging use of available funding opportunities such as the Environment Enhancement Fund to focus on produced water management technology, innovation and efficiency.	Information from the beneficial use of produced water study will be used as a resource for multi-stakeholder workshops to be held in fall 2007
3.6.1 E	**AENV and the EUB should work with industry to investigate the potential for methane migration or release to water wells as a result of CBM depressurization.**	2009	on schedule	• AENV complaint response to water well complaints is being enhanced. • Provincial groundwater monitoring system being enhanced.	• Additional information is being gathered (Directive 35 and Directive 44) to support a future study • Data to date does not show a provincial problem
3.6.2	Based on the results of the previous recommendation, AENV and the EUB should implement appropriate prevention, monitoring, and mitigation measures to address methane migration or release, if necessary.	2010	to start in late 2007 or beyond	• AENV complaint response to water well complaints is being enhanced. • Provincial groundwater monitoring system being enhanced. • EUB continues to review and enhance CBM well construction requirements.	
5.2.3 **	AE, in consultation with stakeholders, should consider the use of appropriate fiscal tools to encourage the use of saline water from CBM development to replace non-saline water for enhanced oil recovery and other industrial uses.	2008	on schedule	• AENV in partnership with PTAC and Alberta Energy will be conducting a study that will review beneficial use policy issues in other jurisdictions and identify beneficial use opportunities. • Results of the study are expected in spring 2007.	The study will be used in fiscal tool discussions with stakeholders.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
Enhancing Information and Knowledge					
3.2.1 E	**The following actions should be undertaken in collaboration with stakeholders to improve the scientific information on the province's water resources:**				
3.2.1.1	Alberta Environment should expand its current monitoring network and data management systems.	2007 & Ongoing	on schedule	• Up to seven new observation wells will be added to the provincial observation well system by spring 2007. • Approximately 40 monitoring wells in the current provincial observation well network were scheduled for enhanced sampling. To the end of February 2007, about 30 of the wells were sampled.	A report on the results of observation well monitoring is expected in spring 2007.
3.2.1.2	AENV should complete its inventory of groundwater in the province, beginning in areas that could experience intense CBM development.	2012	on schedule	• AGS, in partnership with AENV and the GSC has initiated the mapping project for the Ardley coal zone area. • EUB issued Directive 43 (Nov. 1/06) requiring shallow logging which will provide additional information on shallow geology to assist mapping.	
3.2.1.3	The Energy and Utilities Board (EUB) and AGS should complete the Base of Groundwater Protection mapping project.	2007	complete	The AGS has completed updating the Base of Groundwater Protection database and a public notice will be issued in spring 2007.	Base of Groundwater Protection database to be posted on EUB website.
3.2.1.4	AENV and the EUB, with industry, should investigate the potential for unintended effects of CBM development on surrounding aquifers.	2011	on schedule	Provincial groundwater monitoring system being enhanced to provide information on any regional groundwater impacts.	There are many current activities that provide insights into the potential effects of CBM activities on aquifers, such as: • Installation of additional monitoring wells • Enhanced monitoring of wells in the provincial observation well system • Enhancement of investigative tools such as isotopes.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
3.2.1.5	AENV should identify and characterize areas where CBM approval requirements need to be more rigorous due to potential impacts on non-saline aquifers, other water bodies, and other water users. Maps of these areas should be made available to regulators, industry, and stakeholders.	ongoing	on schedule	• Water short areas identified through oilfield water injection study. • Groundwater mapping of the Ardley coal zone commenced.	
3.2.1.6	Before drilling and production from a potentially non-saline aquifer where water volumes are anticipated to be above a threshold limit, CBM operators should obtain baseline data; including gas and mineral content and other indicators of water quality, flow rate/yield, and water levels.	2006	complete	• Standard for Baseline Water-Well Testing for Coalbed Methane/Natural Gas in Coal Operations implemented by the EUB - effective May 1, 2006. • Protocol for gas sampling finalized in August 2006. Scientific Panel established to review standard.	
5.2.1 (non-consensus)	AE, in consultation with stakeholders, should determine an appropriate level of royalty reduction for a period of up to five years to encourage the drilling of saline CBM wells in the Mannville formation for the purposes of acquiring information.		not accepted		
5.2.2 **	The Alberta and the federal governments should consider recognizing Canada's CBM potential through the adjustment of tax regimes, including corporate income tax and freehold mineral tax, to encourage a five year pilot-type drilling program for saline CBM wells in the Mannville formation for the purposes of acquiring information.		not accepted		

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
6.5.1	AE should allow companies an additional one-year continuation under Section 17 of the Petroleum and Natural Gas Tenure Regulation. This additional year would require industry to submit evidence of work conducted during the first continuation period.	2010	on schedule	• Internal consultation initiated. • Extension history for CBM reviewed. Evaluating merits of amending regulations given experience and knowledge acquired in developing CBM resources to date and non-specificity to all mineral rights.	
7.4.1	The EUB, AENV, and ASRD should improve the coordination of their CBM related application and surveillance processes, and develop electronic solutions to facilitate data exchange.	2011	on schedule	Alignment of AENV and EUB processes for baseline testing (coordinated guideline and directive). Preliminary discussions on opportunities for data sharing commenced.	Expect a series of enhancements over this time period.
8.1.2	Regulators should review CBM activities in other jurisdictions to ensure Alberta gains the benefit of studies and experience elsewhere.	ongoing	on schedule	EUB Directive 27 on shallow fracturing included a review of other jurisdictions.	Additional reviews will be conducted on a topic basis
Minimizing Surface Impacts					
4.2.1	The EUB, AENV, and Sustainable Resource Development (SRD) should review its regulatory process for ways to support minimal surface disturbance and reduced cumulative impact associated with CBM development.	2009	on schedule	Bulletin 2006-44 on commingling was issued December 15.	

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
4.3.1 E	**To protect the environment and minimize the cumulative impacts from CBM development, a government-led multi-stakeholder committee, such as that being set up under SRD Integrated Land Management (ILM) Program, if appropriate, should undertake the following sequentially:** **1. Review integrated land management principles, policies, and practices relating to CBM to ensure they maintain the integrity and function of the land, taking into account all uses.** **2. Identify environmentally sensitive and threatened areas (including areas not already designated) that are not appropriate for CBM development.** **3. Recommend needed baseline studies to identify any areas where the integrated land management process may not adequately protect environmentally sensitive areas and make appropriate recommendations for the protection of these areas,** **4. Provide any such recommendations or data gathered from baseline studies to the appropriate existing program/group for consideration and/or implementation in their process.**	2011	on schedule	• Northeast Alberta ILM initiative underway with initial meeting among stakeholders March 22. Scoping and Terms of Reference meeting held June 7. • Six ILM Project multi-stakeholder working groups established to provide direction on key components of the ILM process (principles, protocols, incentives, stewardship, governance, measures). • Results were presented at ILM Workshop Jan 22-24. Final report expected spring of 2007.	The Northeast Alberta ILM initiative has been delayed pending outcomes from the ILM Program and the Land-use Framework.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
4.3.2	Government and all relevant industries should work together to improve the science and technology for remediation and reclamation of the land in sensitive areas that could be impacted by CBM development.	2011	on schedule	• An SRD-sponsored study was completed by the U of C on foothills fescue reclamation. Implementation of study recommendations is being reviewed. • Draft revised Forested Green Area Reclamation Criteria released for review and comments.	The reclamation report is posted at: http://www.srd.gov.ab.ca/lands/managingpublicland/rangemanagement/monitoringreferenceareas.aspx
7.2.1 E	**The EUB and AENV should work with stakeholders to review the application processes for intense CBM developments to enhance and promote project-based planning and disclosure. This would allow:** • **Definition of intense project developments.** • **Full project disclosure.** • **Improved community consultation.** • **Enhanced impact assessment.** • **Review of mitigation measures.**	2010	on schedule	• EUB conducting expanded consultation with community and industry in several locations related to intense energy development projects, including CBM. • New format for SRD Area Operating Agreements has been developed and approvals are being issued under the new format. • Further work is being done on risk management, quality assurance, and compliance. • Process for electronic submission of monthly status reports currently being developed.	
9.2.1	Industry, regulators, and other stakeholders should develop and communicate practices and procedures to deal quickly with short-term noise complaints that are not currently covered under the EUB's Guide 38.	ongoing	on schedule	CAPP's NGC/CBM Best Practices, developed with stakeholder input, was distributed to MAC members and posted to CAPP's website.	
9.6.1	Industry should continue to consult with SRD in consideration of minimizing disturbance to wildlife habitat and scheduling activities to address critical wildlife periods.	ongoing	on schedule	SRD's requirement for wildlife protection plans in certain situations remains. Consultation with SRD by industry on a project specific basis is ongoing.	

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
Communication and Consultation					
3.3.4	AENV should clarify and communicate the existing rules regarding how much drawdown is allowed during CBM/ depressurization in a confined, non-saline aquifer to ensure aquifer protection.	2007	complete	Stakeholders made aware of rules at CBM info sessions.	
3.4.1	The EUB and AENV should communicate with CBM operators, drilling contractors, and water well drillers regarding current and future requirements to protect non-saline aquifers. Action should be taken if there is evidence that an existing well has not met AENV's updated Guidelines for Groundwater Diversion for CBM/NGC Development.	ongoing ongoing	complete on schedule	EUB Directive 27 summarized rules related to water protection. This stimulated numerous one-on-one discussions with companies to clarify requirements and confirm commitment to comply. EUB Directive 44 establishes enhanced surveillance of all produced water from wells with perforations above BGWP and establishes the compliance processes associated with water production above BGWP (all oil and gas wells).	
6.2.1	The Alberta Government should make Crown lessees, freehold owners, and industry aware of the risks and associated impacts of split-title ownership.	2006	complete	Material posted to Department of Energy's website on December 22, 2006.	Link to document: http://www.energy.gov.ab.ca/docs/naturalgas/pdfs/cbm/Split_Title_Mineral_Ownership.pdf
6.2.2	The Alberta Government should set up a process to facilitate parties coming together to work toward resolution of split-title ownership issues.	2008	to start in late 2007 or beyond		Preliminary work will begin in late 2007 to assess government's role.
6.3.1	AE should review and clarify the criteria for Section 18 Notices of Non-Productivity and aggressively serve these notices. Section 18 Notices on existing agreements should continue to be subject to deeper rights reversion.	2010	on schedule	Procedures and policy for Section 18 process reviewed and validated. Energy inter – Business Unit consultations underway.	Energy inter-Business Unit consultations expected to be completed in spring 2007.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
7.3.1	The EUB, AENV, and SRD, with stakeholder input, should review all guidelines that relate to public input opportunities and notification to ensure the guidelines are appropriate for CBM development.	2010	to start in late 2007 or beyond	EUB Directive 35 will gather information on the potential impacts on offset parties.	This technical information will be assessed to determine if changes are required to drilling and completion notification. Work on 7.2.1 will assess alternative ways to receive public input to projects.
7.5.1 E	**Industry, regulators, and other stakeholders should increase the opportunity for dialogue, education, and awareness of the public, surface and subsurface rights holders, leaseholders, and industry on the possible impacts resulting from CBM development, and how the use of the land will be affected.**	ongoing	on schedule	• Increasing number of presentations being made by regulators. • CAPP's NGC/CBM Best Management Practices issued to MAC & posted to CAPP's website. • AENV, EUB, Farmers' Advocate & CSUG held public information sessions on groundwater & CBM in June 06. • CSUG Conference Nov. 06 included sessions on stakeholder issues. • Numerous industry reps. attended & participated in Synergy Alberta conference October 2006 where stakeholder issues were discussed. • CERI, CAPP, CSUG & Alberta Economic Development collaborated on "Socio-Economic Impact of Horseshoe Canyon CBM Development in Alberta" report, released & presented at CSUG conference.	PTAC collaborated with CSUG & others on an Unconventional Gas Technology Roadmap to identify research & applied technology needs for unconventional gas, including CBM. The report addresses technologies relating to environmental and stakeholder impacts, and extraction technologies. PTAC is hosting an unconventional gas workshop in spring 2007 to set priorities for unconventional gas research and innovation to be attended by industry, environmental, research, academic and government stakeholders.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
7.5.2	The EUB and AENV should consolidate CBM data in a publicly accessible and user-friendly database that includes information on postings, wells (e.g., drill logs), applications and approvals, chemical analyses and water production rates, well location, coal formation, production intervals, and monitoring data.	2012	to start in late 2007 or beyond		A single, fully integrated, user friendly CBM/water computer system is a long term initiative. Scoping of the project is to start in 2010. Prior to that there will be a series of data program enhancements as the CBM and water databases grow, including information exchanges amongst regulators to support other recommendations. An example of this is the EUB identification and tracking of all CBM wells in EUB Bulletin 2007-05 .
7.5.3	The EUB should create an easy-to-understand public explanation for 'wells per section per pool' as it refers to CBM development.	2007	complete	• The EUB included a well density clause in its spacing/holding applications effective the fall 2005 to avoid misunderstanding of the number of wells approved. • FAQ was added to the Q & As on the EUB spacing initiative website.	Link to the FAQ: (now ERCB) http://www.ercb.ca/portal/server.pt/gateway/PTARGS_0_0_201_0_0_35/http%3B/extcontent/publishedcontent/publish/eub_home/news/current
7.5.4	The EUB and Municipal Affairs, along with other stakeholders, should clarify and communicate the requirements, roles, and responsibilities related to setbacks.	2012	on schedule	• Municipal Affairs & EUB are compiling a list of setbacks for CBM facilities and equipment. • MA contacting Emergency Management Alberta and Public Safety Division to assist with Canadian Standards Association recommended standards.	
7.5.5	Government and industry should continue to work with stakeholders to develop and implement a communication plan to provide Albertans with better information on CBM issues, including potential effects on water supply.	2007	on schedule	AENV's Groundwater and CBM public information sessions conducted at 13 locations across Alberta in June. Public information fact sheets produced to coincide with sessions. A cross-Ministry communications team has been established and will meet on a regular basis.	

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Target Completion Date	Status	Action Taken	Comments
7.6.1	As recommendations in this document are implemented, it is recommended a multi-stakeholder committee be established by the Assistant Deputy Ministers Sponsors' Committee to conduct a review with the following components: • Annual reviews for three years to assess progress according to a monitoring plan. • A second overall review in three years to assess: 1. The effectiveness of the recommendations, 2. New issues or information, and 3. An assessment as to whether additional recommendations may be needed.	2010	on schedule	• Multi-stakeholder Advisory Committee established. Meetings held Sept. 2006, Dec. 2006 and Mar. 2007. • Action Plan and progress reports updated and reported to MAC II. • Report templates reviewed by MAC II. • Preparation of public update was compiled based on MAC II feedback and review.	
8.1.1 E	**Industry, government, and other stakeholders should work together to develop, document, and implement best practices for CBM operations.**	2007	complete	CAPP's NGC/CBM Best Practices, developed with stakeholder input, distributed to MAC members and posted to CAPP's website.	www.capp.ca/raw.asp?x=1&dt=NTV&dn=103407
9.3.1	The EUB should continue to take into consideration the timing request of the surface rights holder/leaseholder during critical agricultural periods and not call a hearing at those times.	2007	complete	EUB commits to maintain its current practices.	
9.4.1	AE should review the full range of paper to electronic options of notification and should work with local government and other agencies to provide current petroleum and natural gas sales data in a user-friendly format (including map format) to local and/or rural offices such as county offices, agricultural offices, and public libraries.	2008	on schedule	Prototype development near completion.	A demonstration to the Tenure Advisory Committee was completed and comments are being addressed.

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation

Rec #	Recommendation Description*	Targeted Year of Completion	Status	Action Taken	Comments
9.4.2	AE should provide instructions on its website on the process for conducting an information search by land or by mineral agreement.	2008	on schedule	Current instructions on AE's website under review for simplification opportunities.	Extensive instructions currently reside on the website.
9.5.1	The Alberta Government, including Human Resources and Employment (HRE) should expedite the industry initiative to improve the continuing education/certification of land agents, including periodic recertification, and if necessary, amend legislation to provide for same.	2011	on schedule	• Revised Land Agents Licensing Act regulations, which include more stringent standards of conduct for land agents and education and continuing competency requirements, have been prepared for Cabinet Policy Committee for review at the earliest possible date. • CAPL initiated a voluntary certification program to maintain/improve land agent standards. CAPL will be informing all Alberta land agents of their initiative.	Olds College, together with Alberta's energy sector, has established Canada's first ever Chair of Energy Industry Studies to raise the level of professional practice of Alberta's land agent sector. A Call for Nominations was posted in the Edmonton Journal on January 26, 2007.
9.7.1	The Government of Alberta should require Alberta Land Titles to ensure as much transparency of information as possible is included on certificates of title to mineral rights.	2007	reviewed, no action	Service Alberta advised that Land Titles Registry cannot require leaseholders to disclose lease terms and is not the vehicle to adjudicate or solve this issue.	
Other					
7.7.1	Appropriate government departments and agencies should have sufficient resources to be able to implement these recommendations effectively and efficiently.	ongoing		See all other recommendations for implementation details.	

Further information and reference material on CBM can be found at:

- Alberta Energy: www.energy.gov.ab.ca
- Energy Resources Conservation Board (ERCB): www.ercb.ca
- Alberta Environment: www.environment.gov.ab.ca

E denotes early action as identified in the Coalbed Methane/Natural Gas in Coal Final Report
*Complete recommendation text can be found in the Coalbed Methane/Natural Gas in Coal Final Report
** One group did not support this recommendation